

A BRIEF ACCOUNT OF THE DISEASE KNOWN AS OSTEITIS DEFORMANS.

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It will, I trust, be acceptable to the Society if I communicate some facts in regard to a rare disease of the bones.

This affection was first described by Sir James Paget, in the *Transactions of the Royal Medical and Chirurgical Society of London*, in 1877, under the title "A Form of Chronic Inflammation of Bones—Osteitis Deformans." To the five cases which formed the basis of that communication, Paget was able to add in 1890 eighteen further instances of the disease which he had studied. Other cases have been observed in Great Britain; in America up to the present time eleven cases have been reported; a number in France, and a few elsewhere on the Continent of Europe.

It is, however, probable that osteitis deformans is much more common than the number of the published cases would indicate. In the preliminary program of the Association of American Physicians just issued two new cases are announced. The fact that the disease remained long undescribed and is now so seldom recognized, is due not so much to the infrequency of its occurrence as to the trifling subjective symptoms which attend it or their complete absence, its insidious development and slow progress, and the immunity of the bones of the hands and feet. The sufferer from osteitis deformans may develop advanced changes in the skeleton before the deformities attract his attention or that of his friends.

The deformities in some instances affect only a limited number of the bones, more commonly most of them. In the fully developed disease they are usually symmetrical to a remarkable degree.

They consist in the following changes in the skeleton:

Thickening of the bones of the skull and an alteration in its shape. The calvarium becomes flattened, the brow broad, the parietal regions prominent. The general circumference is increased so that the patient has to wear a larger cap than formerly. The bones of the face remain unchanged, so that the facies assume a triangular outline, the base being at the brow, the apex at the chin.

The spine becomes stiffened and curved. There is marked cervico-dorsal kyphosis, with compensating lordosis of the lower

dorsal and lumbar spine. In consequence of this change in the spinal column the head is carried forward and lower than normal, and the height of the patient is reduced—a reduction much increased by the curvature of the bones of the lower extremities and amounting in some of the cases to six or seven inches.

The clavicles are prominent and thickened, the chest short and narrow, the abdomen short and broad and the pelvis wide and low.

Associated with these changes are marked deformities of the long bones of the extremities. The humerus is thickened and enlarged; its surface is irregular, and the shaft is markedly curved, the concavity presenting toward the flexor surface. The ulna and radius show similar deformities and are strongly bent and twisted. The bones of the lower extremities are deformed and bent in a like manner. The femur, tibia and fibula are bent outward and forward.

In fully developed cases the patients bear a curious resemblance to each other. The diminution in stature causes the arms to appear disproportionately long—like those of the anthropoid apes.

The disease usually makes its appearance in middle life and is mostly unattended by subjective symptoms, although in some cases rheumatoid pains have been present at the outset. It has no constant relation to any particular visceral or nervous pathological process, nor to malignant disease as was at one time thought. I have called attention to the high grade of muscular atrophy present in well developed cases.

Paget, whose name has been given to the disease and whose original description remains the best that has thus far appeared, regarded the changes in the bones as inflammatory, and Butlin's account of the histological changes lends support to this opinion.

The process consists of a progressive absorption of bone tissue which becomes porous and rarified; the coincident formation of new bone, which remains for a time uncalcified so that abnormal curvatures develop, and finally dense calcification of the subperiosteal layers of the overgrown and deformed bones. The marrow undergoes fibrous changes. The pathological changes have been especially studied by Butlin, von Recklinghausen, Stilling and Packard Steele and Kirkbride.

The etiology of the disease is involved in complete obscurity. To state that it is due to trophic derangements is a mere general restatement of the facts.

The hypertrophic changes in the bones of an extremity, which

have been shown by Schiff, Vulpian and Philipeaux to follow the section of the nerve supply, cannot be regarded as an analogous process and are not invariable.

Two views suggest themselves: Osteitis deformans may be due to

1. Infection by some organism, to the action of which bone tissue is especially liable; or,
2. To the default of some physiological principle which normally regulates and limits the growth of bone.

Either of these views may serve as a working hypothesis for investigations into the cause of the disease.

This affection has points of similarity with osteomalacia, leontiasis ossea, acromegaly, gigantism, arthritis deformans and rickets, but differs from them all in essential particulars.

No treatment has been of any service in arresting the progress of the disease.

IS SCIENTIFIC NATURALISM FATALISM?

A ONE-MINUTE PAPER.

BY WILLIAM KEITH BROOKS.

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Berkeley pointed out long ago that all the phenomena in nature may be expressed in terms of motion. The progress of science is teaching us this truth, and is thus bringing us to a point of view which Hume has indicated in these words: "The necessity of any action, either of body or of mind, is not in the object which exhibits the action, but in the spectator."

Scientific predictions are based upon our well-founded confidence that the order which we have discovered in nature in the past will continue in the future; but physical analysis neither answers nor asks why nature should be orderly, or what has made it so. For its purposes, the notions of agency and efficiency and causation are irrelevant and useless, because the notion of necessity is something that we ourselves project into nature and not anything that we find in nature.

If we agree with Hume, as I think we must, does not his statement carry with it, as its complement and counterpart, a declaration to this effect: Freedom in willing and doing, if there be such